

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2005/019560

International filing date (day/month/year)  
03.06.2005

Priority date (day/month/year)  
04.06.2004

International Patent Classification (IPC) or both national classification and IPC  
G02B6/12, G02B6/138, G06F3/033

Applicant  
NATIONAL SEMICONDUCTOR CORPORATION

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Bourhis, J-F

Telephone No. +31 70 340-4332



---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2005/019560

---

**Box No. IV Lack of unity of invention**

---

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-22

---

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

1. Statement

Novelty (N)	Yes: Claims	2,3,7,8,14,17,19,20,22
	No: Claims	1,4-6,9-13,15,16,18,21
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item IV.**

The present application does not meet the requirements of unity of invention Rule 13.1 PCT for the following reasons:

- 1 Two separate inventions have been found, which are:

first invention (claims 1-22)

an apparatus comprising a support substrate with a top surface, a waveguide being formed on top surface of the substrate having a thickness measured in orthogonal direction from the top surface of the substrate and an optical lens integrally formed with the waveguide having maximum lens thickness greater than waveguide thickness and collimating the rays emitted by the waveguide in a plane coplanar to the substrate.

second invention (claims 23-29)

an optical input device having a lamina of light over the top surface formed by a plurality of optical structures each comprising a waveguide and an optical position detection device optically coupled with the waveguides and configured to detect data entries.

- 2 They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

The closest prior art has been identified in document D1 (EP569181).

2.1 First invention:

Claim 1 is disclosed by D1 (see part 2 of the section regarding item V of the present communication). Claim 2 differs from D1 in that the front surface of the lens has an in-plane collimating lens curve within the plane perpendicular to the top surface of the substrate and is the first special technical feature of the first invention in the sense of rule 13.2 PCT i.e. making the contribution over the prior art.

The first objective problem, solved by the first invention, can be regarded as to limit the diffraction of light by reducing its spreading in the direction away from the support surface and consequently reducing the power requirements of the input light sources (see page 10 lines 6-8 and lines 19-30).

Claims 2-22 are seen as part of the same invention.

## 2.2 Second invention:

From the comparison of claim 23 with D1 the following features can be seen as special technical features:

a lamina of light formed over the top surface of the support structure and an optical position detection device configured to detect data entries to an input system.

The objective problem, solved by the second invention, consists in determining the location of the coordinates of the interrupts in the lamina when entering data into the input system (see page 5, lines 15-25 of the description of the present application).

- 3 The above analysis reveals that the special technical features of the two inventions are not the same. Furthermore, they are also not corresponding since the objective problems underlying the subjects are different.
- 4 In conclusion, the two groups of inventions are not linked by a common or corresponding special technical features and define different inventions not linked by a single general inventive concept. Hence, the application does not meet the requirements of unity of invention as defined by Rules 13.1 and 13.2 PCT.

## Re Item V.

- 1 Reference is made to the following documents:  
D1 : EP 0 569 181 A (AMERICAN TELEPHONE AND TELEGRAPH COMPANY;  
AT&T CORP) 10 November 1993  
D2 : US-A-5 540 612 (MENDEZ ET AL) 30 July 1996

**2 INDEPENDENT CLAIM 1**

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document): an apparatus(10) having support substrate(14), a waveguide(15,16,17) for transmitting light formed on top surface of the substrate having a thickness measured in orthogonal direction from the top surface and optical lens(12) integrally formed with the waveguide and lens having a thickness greater than the waveguide thickness. The rays emitted from the waveguide are collimated by the lens since the optical lens is wedge-like(tapered) structure mitigating the spreading of light i.e. functioning as a collimator.

Therefore, the claim 1 is not new.

**3 DEPENDENT CLAIMS 2-22**

3.1 Dependent claim 4-6, and 9-13,15,16,18 and 21 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the Article 33(2) PCT in respect of novelty, see documents and the corresponding passages cited in the search report.

3.2 Dependent claim 2,3,7,8,14,17,19,20 and 22 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of Article 33(3) PCT in respect of inventive step, see documents and the corresponding passages cited in the search report.